AMENDMENTS TO THE SPECIFICATION:

Please amend the paragraph beginning at page 3, line 15, as follows:

Chromatic dispersion can be corrected, or "compensated," through the use of specially designed optical components (such as fibers, Bragg gratings) inserted at given locations along the transmission path. For a comprehensive compensation, the total dispersion of the compensating component (which could be packaged e.g. as a dispersion compensating module DCM) must have the same value, but opposite sign to the dispersion of the preceding transmission section, which is obtained if the dispersion is ~~$-D_T(\lambda)$, namely,~~ $-D_T(\lambda)$, namely

$$D_{DCM} \cdot L_{DCM\,fiber} = - D_{fiber\ section} \cdot L_{fiber\ section}. \qquad \text{EQ4}$$

Please amend the paragraph beginning at page 7, line 14, as follows:

Figures ~~1A-1C~~ 1A, 1B and 1C show chromatic dispersion, where Figure 1A shows the spectral width of a channel; Figure 1B shows the shape of a data signal at the input to a dispersive fiber link and Figure 1C shows the same data at the output of the link;

Please amend the paragraph beginning at page 10, line 10, as follows:

At the output of optical link **7**, the optical signals λref and $\lambda 1$ are separated using a splitter **3'** followed by tunable filters **50** and respectively **50'**, for extracting the respective channel at the input of the corresponding transceivers **Tz2ref** and **Tz2test**. Detectors **2** and **2'** of the respective receiver **Rx2ref** and **Rx2test** convert the reference and test optical signals to an electrical format, to recover the respective data signals. The data signals carried by the two test channels suffer different dispersion impairments along link **7**, because the optical carriers have a different wavelength and also because they pass through slightly different dispersive components ~~along link 7~~. In addition, as the test wavelengths are not transmitted at the same time, determination of

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

the phase difference between the two data signals traveling along wavelengths $\lambda 1$ and $\lambda 2$ must take into account this time lag as well.

Please amend the paragraph beginning at page 11, line 14, as follows:

Figure 2B also shows a phase measuring (PM) unit **10** coupled at node **B** according to an embodiment of the invention. Dispersion measurement for forward (West to East) traffic is considered; it is to be noted that similar operations and equipment may be used for measuring dispersion on the reverse links. Also, ~~dispersion~~ phase measurement unit **10** is shown at the transceiver **Tz2test**; however unit **10** could be connected at **Tz2ref** or could be a separate device. It is also to be noted that Figure 2B only shows the receive side of transceivers **Tz2ref** and **Tz2test**, which are relevant to the invention.

Please amend the paragraph beginning at page 12, line 13, as follows:

The static (fixed) reference is shown at **50**. The phase θ of the DIV 16_{test} clock is given by:

$$\theta = \theta_{rel} + \text{rotation} \cdot 2\pi/n \qquad \text{EQ5}$$

where θ_{rel} is the phase of the respective data signal relative to the fixed reference **50**. The rotation signal provides the digital value of the phase (i.e. by how many bits the frame of the signal is shifted with respect to the positive edge of the clock). This is detected by PM unit **10** or PHY **6'** which determines the rotation state of demultiplexer **4, 4'**. Figure 3 shows examples of clock-data offsets. The clock shown at **(a)** is in phase with the start of the frame (digit **F1**), so that in this case $rotation_a$=0, and θ (a) = θ_a. The clock shown at **(b)** is out of phase by $2\pi/n=\pi/8$, being aligned with **F2**, so that in this case $rotation_b$=1, and the data needs one rotation to align **F1** with clock **(b)**. In this example, θ (b) = $\theta_b + \pi/8$. Finally, the clock shown at **(c)** is out of

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

phase by $-\pi/8$, being aligned with **D16**, so that in this case $rotation_b$=15, as the data needs 15 rotations to align the start of frame ~~F1with~~ **F1** with clock **(c)**. In this example, $\theta(c) = \theta_c + 15\pi/8$.

Please amend the paragraph beginning at page 13, line 1, as follows:

Returning to the operation of ~~PDU~~ PM unit **10**, the *phase1* and *phase2* signals together with the respective '*rotation1*' and '*rotation2*' measured for the two test channels are provided to a dispersion measurement DM controller **15**, which calculates phase_1 and phase_2 relative to the fixed reference point

$$phase\_1 = phase1 + \frac{\pi}{8}\ x\ rotation1$$

$$phase\_2 = phase2 + \frac{\pi}{8}\ x\ rotation2 \qquad \text{EQ5'}$$

Please amend the paragraph beginning at page 13, line 8, as follows:

~~On Figure 3, *phase1* is one of θc – θc and *phase_1* is the corresponding θ (c) to θ(c).~~

Please amend the paragraph beginning at page 14, line 3, as follows:

DM controller **15** may also be used for post-calculation activities, such as to compare the calculated dispersion against a dispersion target and to recommend fixed dispersion values for the DCM (dispersion compensation modules) provided generally along a transmission link. If a tunable DCM (a TDC) is available at the destination node (here node B), controller **15** sets it at a mid-point, selects a fixed DCM to bring the adjustment into the range and then adjusts the TDC in a closed loop until the dispersion target is achieved. ~~DMC~~ DM controller **15** also adapts the

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

dispersion data to a format suitable for transmission and storage into the performance database **40** for use by various entities involved in path selection and set-up.

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567